Information Technology/Networking
Skill Standards Checklist

CERTIFICATION AREAS COMPLETED:

____ Core Abilities

____ Safety

Year 1
____ Semester One
____ Semester Two

Year 2
____ Semester Three
____ Semester Four

____ A minimum of 900 work hours

Student Name_____

School District_____

YA Consortium_____

YA Coordinator_____

High School Diploma/GED/HSED

Date Received_____

All CISCO worksite competencies are transferable to other network environments. (Source: Wisconsin Information Technology/Networking Employer Advisory Committee.)

Total Hours Employed	**Company Name**	**Phone #**
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Governor's Work-Based Learning Board - WBL-10206 (R. 08/2003)

Instruction for the Worksite Mentor

The Skill Standards Checklist is a list of competencies (tasks) to be achieved through mentoring at the worksite.

- Each competency has three levels.
- The worksite mentor should rate each competency as the student acquires and demonstrates the skill.
- A competency may be revisited and the score raised as the student becomes more proficient at the worksite.
- The mentor and the student should go over the checklist together on a regular basis (at a minimum every 9 weeks) to record progress and plan future steps to complete the required competencies.

Please sign this page if you have been a mentor, trainer or instructor of this student.

CERTIFICATION: I certify that this student has successfully completed the competencies required in my department.

	Mentor/Trainer Signature		Printed Name
	Department		Date Signed
	Mentor/Trainer Signature		Printed Name
	Department		Date Signed
	Mentor/Trainer Signature		Printed Name
	Department		Date Signed
	Mentor/Trainer Signature		Printed Name
	Department		Date Signed
	Mentor/Trainer Signature		Printed Name
	Department		Date Signed
	Instructor Signature		Printed Name
	Department		Date Signed
	Instructor Signature		Printed Name
	Department		Date Signed

Core Abilities   Required

Core abilities address broad knowledge, skills, and attitudes that go beyond the context of a specific course. These standards are not taught in specific lessons. These are the employability skills that are critical for success in the information technology industry.

RATING:

3 = Consistently displays this behavior

2 = Often displays this behavior

1 = Rarely displays this behavior

<u>**Score**</u>

1. Works productively	3 2 1	
2. Learns effectively	3 2 1	
3. Communicates clearly with supervisor and others	3 2 1	
4. Works cooperatively with others	3 2 1	
5. Acts responsibly	3 2 1	
6. Thinks critically and creatively	3 2 1	
7. Works as a team member	3 2 1	
8. Works well with individuals from diverse backgrounds	3 2 1	
9. Chooses ethical courses of action	3 2 1	

All competencies in this section must be rated 2 or higher

Comments:

Safety   Required

RATING:

3 = Consistently displays this behavior

2 = Often displays this behavior

1 = Rarely displays this behavior

		Score		
1.	Apply tool, hand and eye safety procedures	3	2	1
2.	Report injuries/accidents following company procedures	3	2	1
3.	Simulate or describe electrical safety procedures	3	2	1
4.	Apply environmental safety and chemical awareness procedures, and follow environmental regulations	3	2	1
5.	Apply safety practices related to infectious disease, blood-borne pathogens, and chemical hygiene	3	2	1
6.	Apply thermal safety procedures	3	2	1
7.	Apply radiation safety procedures	3	2	1
8.	Apply laser safety procedures	3	2	1
9.	Demonstrate lock-out/tag-out procedures associated with potential energy sources	3	2	1
10.	Apply fiber optic handling safety practices	3	2	1
11.	Simulate or describe a leakage check on electronic equipment	3	2	1
12.	Simulate and/or describe the proper procedure for testing electrical equipment to ensure proper grounding	3	2	1
13.	Identify sources of hazardous noise	3	2	1
14.	Demonstrate safe lifting and material handling procedures	3	2	1
15.	Demonstrate traffic and vehicle safety procedures	3	2	1

All competencies in this section must be rated 3

Comments:

Info Tech/Networking   Semester I

RATING:

3 = Able to perform entry level skills. Has performed task during training program; limited additional training may be required

2 = Has performed task during training program; additional training is required to develop entry level skill

1 = Is familiar with process, but is unable to perform task with entry level skill

Basic Network Design and Analysis   **Score**

1.	Develop and format IP addresses for a network or internetwork	3	2	1
2.	Set up a subnet and assign the subnetwork address	3	2	1
3.	Update network ARP tables	3	2	1
4.	Identify or select media for a network installation	3	2	1
5.	Design and implement a LAN study using the four-step process	3	2	1
6.	Select network media (wiring) for a horizontal cabling application	3	2	1
7.	Select topology type (star or linear bus) for a new LAN installation	3	2	1
8.	Design an Ethernet LAN with Star Topology	3	2	1
9.	Design a LAN with more than one wiring closet with Star Topology	3	2	1
10.	Develop a wiring plan for an extended Star Topology LAN	3	2	1
11.	Select backbone cable (POP to MDF) for single building installation	3	2	1
12.	Select backbone cable (POP to MDF) for multi-building installation with multiple earth grounds	3	2	1
13.	Determine the optimum placement of a wiring closet for a LAN installation in a single building	3	2	1
14.	Determine the optimum placement of a wiring closet for a LAN installation in a multi-story building	3	2	1
15.	Determine the optimum placement of a wiring closet for a LAN installation in a multi-building building	3	2	1
16.	Design a wiring closet for a network	3	2	1
17.	Determine the location for a network Main Distribution Facility (MDF)	3	2	1
18.	Determine the location for a network Intermediate Distribution Facility (IDF)	3	2	1
19.	Determine the location for a network patch panel	3	2	1
20.	Develop a cut sheet	3	2	1
21.	Create basic network documentation	3	2	1
22.	Use network management station to troubleshoot network problems	3	2	1
23.	Use static electricity grounding devices	3	2	1

Basic Network Installation/Wiring **Score**

24. Measure cable resistance	3	2	1
25. Perform loop resistance or insulation tests	3	2	1

Competencies #26 – 29 involve electricity or wiring and may be restricted – youth apprentices should only simulate and/or describe the competency.

26. Check quality of cable ground(s)	*3*	*2*	*1*
27. Wire an electrical socket	*3*	*2*	*1*
28. Measure AC voltage	*3*	*2*	*1*
29. Measure DC voltage	*3*	*2*	*1*
30. Install UTP cable	3	2	1
31. Install STP cable	3	2	1
32. Fish cable from above a wall	3	2	1
33. Fish cable from below a wall	3	2	1
34. Label cables	3	2	1
35. Label terminators	3	2	1
36. Punch data wires into a patch panel	3	2	1
37. Install a data surface mount	3	2	1
38. Install a data flush mount	3	2	1
39. Connect data cable to a jack	3	2	1
40. Splice wire cable	3	2	1
41. Splice fiber-optic cable	3	2	1
42. Install a LAN with Star Topology in more than one wiring closet	3	2	1

Test Network Operation

43. Conduct visual inspection of media layer	3	2	1
44. Verify integrity of media layer installation	3	2	1
45. Identify solutions to variance in electrical supply	3	2	1
46. Test LAN to determine baseline measurements	3	2	1
47. Test cable using a Time Domain Reflector	3	2	1
48. Test/evaluate the LAN for operational performance and integrity	3	2	1
49. Perform operational checks of routers, servers, or hubs	3	2	1

50.	Troubleshoot network operational problems	3	2	1
51.	Analyze written and verbal network problem reports and recommend solutions	3	2	1
52.	Develop summary reports of network reported problem(s) and associated corrective action(s)	3	2	1
53.	Develop a recommended change for a LAN system, given customer stated LAN performance problems	3	2	1

 # Of items completed with a 1 or higher rating _____ (53 required)

 # Of items completed with a 3 rating _____ (26 required)

Comments: _____

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2 = Has performed task during training program; additional training is required to develop entry level skill

1 = Is familiar with process, but is unable to perform task with entry level skill

Network Design and Analysis   <u>Score</u>

1.	Design a subnetwork in classes B and C	3	2	1
2.	Write a routing protocol	3	2	1
3.	Update routing tables	3	2	1
4.	Recommend appropriate user interfaces for a designated user	3	2	1
5.	Recommend console terminals, auxiliary port modems, and virtual terminals for a designated external configuration	3	2	1
6.	Recommend RAM/DRAM, NVRAM, Flash, ROM, and interfaces that meet the industry standard for a designated configuration	3	2	1
7.	Recommend the appropriate configuration mode in order to perform a designated operation	3	2	1
8.	Recommend the appropriate use of CISCO Discovery Protocol, CDP Neighbors, or Telnet in a specific network architecture	3	2	1

Network Router Installation

9.	Configure a router	3	2	1
10.	Perform initial router software "handling" tests	3	2	1
11.	Load CISCO IOS or other router operating software	3	2	1
12.	Create and load a software image backup	3	2	1
13.	Configure IP addresses for a set of interconnected networks	3	2	1
14.	Configure and apply a router to enable the IP routing protocols of RIP, IGRP and monitoring IP	3	2	1
15.	Document the process, problems and solutions for a network startup sequence	3	2	1
16.	Apply system setup mode	3	2	1
17.	Configure the network from TFTP server	3	2	1
18.	Configure the network from NVRAM	3	2	1
19.	Configure the network or router using user EXEC mode	3	2	1
20.	Configure the network or router using Global configure mode	3	2	1

Network Router Installation (continued)   **Score**

21.	Configure the network or router using IP routing protocol mode	3	2	1
22.	Configure IP addresses	3	2	1
23.	Configure the network or router using Interface configure mode	3	2	1
24.	Manage configuration files by applying privileged EXEC mode	3	2	1
25.	Apply configuration methods to control router passwords and router identification	3	2	1
26.	Locate CISCO IOS or other operating systems software using TFTP server control	3	2	1
27.	Execute NVRAM – default source using TFTP server control	3	2	1
28.	Locate command information software on the router	3	2	1
29.	Use bootstrap options to locate flash memory and network server ROM	3	2	1
30.	Upgrade image software backup from the Internet	3	2	1
31.	Apply commands to locate CISCO IOS or other operating systems software	3	2	1

Test Network and Router Operations

32.	Review command history	3	2	1
33.	Access a router and examine/maintain its components	3	2	1
34.	Access a router and test network connectivity	3	2	1
35.	Update a router's configuration files	3	2	1
36.	Maintain backup files	3	2	1
37.	Upgrade CISCO IOS or other operating system software	3	2	1
38.	Configure, monitor and verify standard and extended access lists to filter IP traffic	3	2	1
39.	Identify and implement solutions to LAN to LAN routing problems	3	2	1
40.	Determine and conduct a test of a network layer	3	2	1
41.	Determine and conduct a test of an application layer	3	2	1
42.	Determine and conduct a test of a data link layer	3	2	1
43.	Determine and conduct a test of a physical layer	3	2	1
44.	Identify and implement solutions to specific LAN to WAN routing problems	3	2	1
45.	Identify and implement solutions associated with specific layer descapsulation	3	2	1

 # Of items completed with a 1 or higher rating _____ (43 required)

 # Of items completed with a 3 rating _____ (23 required)

Info Tech/Networking   Semester III

RATING:

3 = Able to perform entry level skills. Has performed task during training program; limited additional training may be required

2 = Has performed task during training program; additional training is required to develop entry level skill

1 = Is familiar with process, but is unable to perform task with entry level skill

Network Design and Analysis	Score		
1. Demonstrate the scalability of a switched LAN	3	2	1
2. Design and demonstrate the advantages of a half-duplex LAN	3	2	1
3. Design and demonstrate the advantages of a full-duplex LAN	3	2	1
4. Demonstrate the use of segmenting, segmenting steps and dynamic steps in the design of a switched network	3	2	1
5. Recommend the appropriate use of port-based memory and shared memory buffers in the design of a LAN	3	2	1
6. Demonstrate the concepts, functions and benefits of a VLAN	3	2	1
7. Demonstrate the proper use of bridges and/or switches in the design of a LAN in layer three	3	2	1
8. Demonstrate the proper use of routers in the design of a LAN in layer three	3	2	1
9. Select appropriate server for use in both an enterprise and a workgroup	3	2	1
10. Identify and resolve security issues in the design of VLAN	3	2	1
11. Recommend the appropriate use of store and forward versus cut-through switching methods	3	2	1
12. Apply the use of loops and bridge protocol data units in the design of a LAN using STP	3	2	1
13. Design a switched network for multiple VLANS (ID)	3	2	1
14. Design a network with multiple routers and segments using access lists to filter traffic for specific segments (or users)	3	2	1
15. Design a multiple router network using a dynamic routing protocol	3	2	1
16. Summarize the process used in the setup of a VLAN	3	2	1

Network Installation

17. Configure and document a single switch LAN with multiple VLANS	3	2	1
18. Configure and document a LAN using multiple switches and VLANS	3	2	1
19. Relocate and document user locations in a VLAN	3	2	1
20. Configure a LAN using firewall segmentation for broadcast	3	2	1
21. Identify and document changes to the initial configuration to port-centric VLANS and dynamic VLANS	3	2	1
22. Configure switch to override auto sensing port	3	2	1

Network Installation (continued)   <u>**Score**</u>

23.   Identify and apply the appropriate use of the dynamic routing protocol for IP/IPX   3   2   1

24.   Configure standard and extended access lists to filter IP traffic   3   2   1

Test Network Operation

25.   Detect collisions with CSMA/CD (Carrier Sense Multiple Access/Collision Detect)   3   2   1

26.   Identify and provide solutions to congestion and bandwidth problems in a switched LAN   3   2   1

27.   Resolve high latency problems using the concepts of segmentation and collision domains   3   2   1

28.   Resolve a network problem with the appropriate use of half-duplex Ethernet or full-duplex Ethernet   3   2   1

29.   Identify and document recommendations to lower the number of broadcast storms in a LAN or VLAN   3   2   1

30.   Identify and define a solution to a VLAN problem using the control of the broadcast domain size   3   2   1

31.   Monitor and verify standard and extended access list to filter IP traffic   3   2   1

32.   Verify and document convergence within the network for both IP and IPX routing protocol and IPX SAPs   3   2   1

 # Of items completed with a 1 or higher rating _____ (32 required)

 # Of items completed with a 3 rating _____ (16 required)

Comments: _____

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RATING:

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2 = Has performed task during training program; additional training is required to develop entry level skill

1 = Is familiar with process, but is unable to perform task with entry level skill

Wide Area Networking Services	Score		
1. Use Layer 2 encapsulation protocol to configure WAN connections for specified WAN technology and communicating equipment	3	2	1
2. Establish the communication protocol for a WAN leased line	3	2	1
3. Evaluate a customer's need for leased line connectivity and develop a recommendation for the customer	3	2	1
4. Evaluate a customer's need for a Frame Relay vs. a point-to-point WAN and develop a recommendation	3	2	1
5. Configure a secondary dial back up (DDR) line for a WAN system	3	2	1

WAN Design

6. Evaluate a small business communication requirement and recommend a WAN protocol for ISDN services	3	2	1
7. Evaluate a large business communication requirement and recommend a WAN protocol for ISDN services	3	2	1
8. Analyze the performance and make recommendations for improvements to an existing inter-network	3	2	1
9. Analyze the environment, organizational structure, and data flow patterns in a client organization	3	2	1
10. Define the client organization's WAN requirements for throughput, response time, and access to network resources	3	2	1
11. Identify client organization's existing or planned applications that pose potential for network congestion	3	2	1
12. Describe the benefits of a hierarchical network design to a client wishing to establish a network	3	2	1
13. Develop the layer or network design for a small company that has sites within a two mile radius of the central office	3	2	1
14. Determine the placement of the enterprise server in a network system, relative to the types and quantities of network traffic	3	2	1
15. Select and configure PPP authentication protocol	3	2	1
16. Check the LCP and NCP states of configured PPP	3	2	1
17. Develop a customer recommendation for remote access using ISDN or a Dialup system	3	2	1
18. Select and recommend equipment that uses the ISDN BRI service for a customer's facility	3	2	1
19. Select and recommend equipment that uses the ISDN PRI service for a customer's facility	3	2	1
20. Establish an "R" network interface	3	2	1
21. Establish an "S" network interface	3	2	1

WAN Design (continued)   <u>**Score**</u>

22.   Establish an "T" network interface   3   2   1

23.   Establish an "U" network interface   3   2   1

24.   Identify and recommend a network remote access encapsulation solution for an identified customer   3   2   1
      environment

ISDN Configuration

25.   Specify ISDN switch type for a customer's router configuration   3   2   1

26.   Configure a router to plan ISDN network-level calls and transfer data among the United States and   3   2   1
      Canada, France, Japan, Germany, and the United Kingdom

27.   Configure a WAN to receive calls from more than one dial-up source   3   2   1

28.   Use ISDN SPID1 and ISDN SPID2 commands to access the ISDN network   3   2   1

29.   Verify legacy dial back up (DDR) operation   3   2   1

30.   Identify problems and associated solutions to legacy dial back up (DDR) malfunctions   3   2   1

 # Of items completed with a 1 or higher rating _____ (30 required)

 # Of items completed with a 3 rating _____ (15 required)

Comments: _____

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Special Projects or Certifications/Cisco Certification (CCNA)

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Instructor/Mentor Comments: _____

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Instructor/Mentor Signature _____

Date Signed _____

Notes